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Improving Phosphorus Removal by Anoxic-Oxic process in WWTP of Khoy Power plant

Amirhosain Mahvi[1], Mohammad Aganaghad[2], Behzad Haibaty[3]

Abstract:

The goal of the research was investigation and solving existing problems of Khoy power plant waste water treatment plant (WWTP) and optimizing of phosphorus removal in it.

The treatment plant was operating with extended aeration process, and some problems had, so in the first stage with in investigation of total efficiency, problems and their reasons determined. In the second stage after operational modifications existing problems was solved and real efficiency of treatment plant particularly for phosphorus(P) removal determined. In the third stage, system converted to A/O process and new system was tested with Changing parameters like food micro organism(F/M), /return sludge ratio(RAS)and sludge retention time(SRT). In the first stage the most important problems recognized that were; over concentration of BOD,TSS, and P in effluent of treatment plant and overgrows of alga in parts of treatment plant and effluent receiving conduit. The main reason of high concentration of P was over releasing of sludge. In the second stage operating condition modification efficiency of P removal increased from 50to 62 percent. In the end of third stage value of P removal reached to %82 and the most suitable of anoxic contact time was determined 3to4 hours, SRT 3 day and F/M ratio o.12. Adjusting of operating factors like SRT,RAS, sludge processing manner in WWTP can increase P removal in them with in total efficiency remaining, such as in this case it was %12. In waste water treatment particularly for P removal the A/O process is suitable so in this project its effect on P removal efficiency has been %20.

Keywords: Wastewater treatment; Biological phosphorus removal; Anoxic/Oxic process; Khoy power plant

1. Department of Environmental health, Faculty of Health, Tehran Medical Science University, Iran (ahmahvi@yahoo.com)
2. Environmental health engineering MS graduated, Khoy Faculty of Nursing & Health, West Azerbaijan Medical Science University, Iran, corresponding author (mamamaxy01@yahoo.com)
3. Department of Environmental health. Faculty of Health, Ardabil Medical Science University, Iran (B_haibaty@yahoo.com)